A Message from the Acting Chief of the Rapid Spacecraft Development Office:

As usual, life at RSDO continues to be busy. We have many organizational changes to report, as well as progress on the development of our new contract vehicle (Rapid II), and other efforts.

Jim Adams, Chief of RSDO, continues his assignment to GSFC's Systems, Technology, and Advanced Concepts Directorate. Jim is leading the GSFC capture team for the New Millennium Program's Earth Orbiting 3 mission. In the mean time, I, Scott Greatorex, have been named the Acting Chief of RSDO.

As a result of this reassignment and the heavy workload here at RSDO, Bill Watson from GSFC's Mission Services Program Office (Code 450) has been assigned to a temporary 120-day detail to the RSDO. As deputy office manager, Bill is assisting in the management and operation of the RSDO. He is working to support the development of Rapid II, assisting in the Quick TOMS rapid procurement, and helping to develop a customer acquisition handbook. In addition, Bill helped ensure that the RSDO was prepared for the ISO 9000 certification that took place last month.

The RSDO is also part of a new organization at GSFC. This reorganization, which was effective in August 1999, placed RSDO under the jurisdiction of the Mission Services Program Office (formerly the Network and Mission Services Project). Likewise, the RSDO has been assigned a new GSFC Code number: Code 456. Other entities in Code 450 are:

The Space Network Project (Code 451)
The Ground Network Project (Code 452)
The Mission and Data Services Project (Code 453)
The Tracking Data Relay Satellite Project (Code 454)
The Integrated Financial Management Project (Code 455)
The Orbital Launch Services Transition Project (Code 457)

We at RSDO are very excited to be a part of this new organization!

We also have another bit of news regarding our personnel. RSDO Contract Specialist, Leif Grotos, recently received warrant authority. This privilege enables him to act as the government's agent, and gives him the authority to sign contracts on the government's behalf. Congratulations, Leif!

Please review this issue of the RSDO newsletter for updates on our ongoing projects, including the status of the Rapid II effort, the Small Explorer Announcement of Opportunity, and the recently completed Quick Ride Studies.

Also in this issue, Bill Watson reports on the Small Satellite Conference that he and Ron Miller attended, and Kevin Maloney details the new conferencing capabilities available in the RSDO.

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The Contracting Officer's Corner

Quick Ride Studies Finished

This past May, the RSDO study contracts for the Quick Ride contract were completed. Quick Ride is a joint effort between RSDO and the Langley Research Center (LaRC), with support and funding provided by NASA Headquarters. The four companies that received study contracts were Orbital Sciences Corporation, Lockheed Martin Missiles and Space, Hughes Space and Communications, and Space Systems Loral.

The studies examined the feasibility of accommodating a science instrument or technology demonstration as a secondary payload on commercial Geosynchronous Earth Orbit (GEO) communications satellites. The purpose of the studies was twofold: to identify excess capacity on the companies' respective GEO satellites; and secondly, to identify the parameters and constraints that potential secondary payloads would have to abide by to qualify for flight on those satellites. The RSDO's goal is to develop a generic handbook containing the standard characteristics of all the GEO satellites examined by the four companies. Instrument developers will be able to use the guidebook during the design and build cycles of their instruments.

Quick Ride is a multiple award, Indefinite Delivery Indefinite Quantity (IDIQ) contract awarded July 28, 1998 and running through July 2003. It contains a unique provision that allows satellite owners to make offers any time during the life of the contract. When an owner of a GEO satellite identifies excess capacity, he has the opportunity to offer that space to NASA. The Quick Ride studies will ensure that a secondary payload would not interfere with the performance of the primary mission. Additionally, the Quick Ride contract allows a satellite owner to terminate the government in the event of non-performance. Overall, the Quick Ride contract contains many industry-friendly provisions, and is based to the fullest possible extent on commercial practices.

This niche, though small, has the potential to provide benefits to all parties involved. Manufacturers will profit from the additional integration effort. Owners will be able to receive additional funding during the build cycle, helping with cash flow. The scientific community will be able to conduct more science at reduced costs. Furthermore, ancillary commercial opportunities may be explored by the satellite owner. In many instances, the Government only operates its missions for two to three years. Hence, after the government mission is complete, the satellite owner may be able to turn the instrument back on and market

the additional data.

NASA commends all the study contractors on their performance. All the studies and reviews were accepted. The RSDO and LaRC look forward to expanding and developing business relationships with industry, and hope the Quick Ride opportunity will be just one of the means by which this is accomplished. For more information on the Quick Ride contract, please visit the RSDO web site at http://rsdo.gsfc.nasa.gov.

By Leif Grotos/RSDO Contract Specialist

Please Remember ...

The RSDO strongly supports the consideration of small or disadvantaged businesses. Please make an effort to investigate whether the inclusion of such a business could benefit your team.

New Business

Small Explorer Announcement of Opportunity

RSDO has worked extensively with the developers of the Small Explorer (SMEX) Announcement of Opportunity (AO) in recent months. Thanks to all who alerted us to some issues in the draft document! We hope to be able to present Rapid II and Quick Ride at the Bidders Conference (expected to occur in November 1999), and Rapid will be included in the appendices of the Explorer Library.

The entire SMEX team (NASA Headquarters, Langley, GSFC) is committed to selecting missions for advancement to the second round based solely on Science and Instrument feasibility. As it stands now, the second round will occur in early 2000, when Rapid II will be available. Although RSDO will support any PI inquires, we do not expect any "customers" until the Step 2 announcements are made. It has also been decided that the commercial launch services option on Rapid II will not be available for SMEX PI.

RSDO will continue discussions with the various AO sponsors to improve the process. One idea has been to delay spacecraft selection until after a Mission concept has been selected for flight. In other words, can NASA judge the feasibility of a science mission based on science, instrumentation, and feasibility information, without knowing who is building the bus? We believe that in most cases, the answer is "Yes," and we continue to push NASA to think "out of the box."

By Ron Miller/RSDO Mission Integration Manager

NPOESS Has a New Web Page

The NPOESS (National Polar-orbiting Operational Environmental Satellite System) Preparatory Project (NPP) has developed a web page hosting information on the status of the mission and upcoming events. This page is located at the following URL: http://jointmission.gsfc.nasa.gov/.

Check it regularly for the latest NPP information, including the announcement of the Cross-track Infrared Sounder (CrIS) instrument prime contractor and the solicitation announcement for the Advanced Technology Microwave Sounder (ATMS) instrument. RSDO continues to work with the NPP team and will announce major events as they occur.

Rapid II RFO Update

The Rapid II RFO was released on August 19th, and we hope that many of you are working on proposals for the October 4th deadline. All schedules remain solid, and we expect selections/notifications prior to the December holidays.

We cannot add much information at this point, but would like to thank all who made comments during the RFO generation process. Although we were unable to accommodate all suggestions, we believe we have created a contract that will be successful for the next five years, and one that will be as groundbreaking as the first Rapid Spacecraft Acquisition.

In the near future, we will be working on the details regarding the overlap of the first Rapid contract (RSA) with Rapid II—an announcement will be made prior to the new year.

By Ron Miller/ RSDO Mission Integration Manager

RSDO Representatives Attend the 13th Annual Utah State University Conference on Small Satellites

On August 23-26, Ron Miller and Bill Watson (both of RSDO) attended the Utah State University Conference on Small Satellites, along with 500 other registered participants. The conference theme was "cheaper by the dozen," which inspired presentations on topics such as constellation and formation flying, multiple payload launchers [Pucksat/GSFC and Evolved Expendable Launch Vehicle Secondary Payload Adapter (ESPA)/Air Force Research Laboratory], and new hardware and subsystems.

The keynote speaker, Dr Albert Pisano from the Defense Advanced Research Projects Agency (DARPA), addressed Micro-Electro Mechanical Systems (MEMS) and implications for revolutionary new spacecraft concepts. In the past, spacecraft design evolved by component substitution. MEMS is a new way of thinking—sensing computers actuate control and transfer power. MEMS is a marriage of integrated circuit (IC) manufacturing technology and control system functionality. It enables micro-device control of electrical, thermal, magnetic, optical, and mass flux. MEMS has been used to place 1,000,000 controlled mirrors in a 1.5"x1.5" area with virtually

no mass and a 100 msec response time. Radio frequency components (filters and oscillators) are built at IC scales, and are able to withstand 50,000 Gs of force. DARPA envisions the eventual use of MEMS for active control of wing tip vortices in aircraft flight and intelligent munitions.

In Session IIA on Advanced Operations Concepts Systems, Orbital Science Corporation's David Callen addressed lessons learned for dual launch (co-payload) missions. In the world of primary and secondary payloads, the secondary customer has fewer privileges and less insight than the primary client. Success of these dual launch missions depends upon early coordination, managing customer expectations, and understanding the cost of failure to meet commitments.

Surrey Space Center's presentation, "30 Years of Commercial Components in Space," notes that Commercial Off-The-Shelf (COTS) technology is feasible in space due to improving manufacturing processes, which lead to increasing reliability and low purchase prices. Unlike MIL-spec parts, however, COTS technology has a heritage problem that precludes sample testing. The space community's emphasis is on meaningful test regimes—there is tremendous value in trial and vibration testing—thus the corresponding view: If you only get one shot every few years, then invest in qualified parts.

Technical session XI on Advanced Subsystem or Component Development contained a variety of useful topics:

A paper from Valley Forge Composite Technologies on high-speed, low-weight momentum/reaction wheels addressed the advantages of cylindrical hollow-roller bearings over traditional ball bearings in space applications.

The Starsys Research Corporation presented a paper on Shaped-Memory Alloy Actuated Separation Mechanisms, describing the performance of release nuts simultaneously separating within 2 msec, and addressing the advantages of eliminating pyrotechnic separators.

Representatives from Surrey Space Center described a new approach to achieving stand-alone GPS attitude determination using dual antenna short baseline (30 cm) signal phase detection, sampling, blocking, and an extended Kalman filter.

The student research papers were remarkable—in several cases more notable than invited presentations. UASat's laser pointing analysis for tracking a ground station from Low Earth Orbit (LEO) not only contained some impressive mathematics, but also came with a Matlab animated simulation.

We experienced good material, good weather and good food—thanks to the munch and mingle corporate sponsors!

By Bill Watson/ RSDO

RSDO Goes Hi-Tech

With the installation of an LCD Projector and a VHS video machine in our conference room, the RSDO has gone hi-tech. Anyone scheduled to use our conference room (including visitors) may now utilize our state-of-the-art projector for slide presentations. Simply hook up a laptop to our new system, and there are no more vu-graphs to make! Just crank up the old laptop, launch your presentation package, and start talking. If you use RSDO's laptop, we can even provide DVD capabilities. Our newly installed VHS video machine gives us the capacity to show videos on-screen so that they may easily be viewed by a large audience. We are hoping to obtain access to NASA Select TV soon. It is also possible to use our conference room telephone to connect to the Internet (for official purposes only) and display information on-screen with our projector. Please feel free to utilize these new advanced capabilities the next time you visit the RSDO!

By Kevin Maloney/RSDO

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Please send Questions and Comments about this newsletter to braatz_lena@bah.com